Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems	)	ET Docket No. 00-258
	)	
Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use By the Mobile-Satellite Service	)	ET Docket No. 95-18
	)	
The Establishment of Policies and Service Rules for the Mobile-Satellite Service in the 2 GHz Band	)	IB Docket No. 99-81
	)	
Petition for Rule Making of the Wireless Information Networks Forum Concerning the Unlicensed Personal Communications Service	)	RM-9498
	)	
Petition for Rule Making of UTStarcom, Inc., Concerning the Unlicensed Personal Communications Service	)	RM-10024

COMMENTS OF UTSTARCOM, INC.

UTStarcom, Inc. ("UTStarcom") hereby submits comments in response to the Commission's *Further Notice of Proposed Rulemaking* in this proceeding.[1] As part of its examination of frequencies to allocate for future generations of wireless systems, the Commission has included consideration of the 1910-1930 MHz unlicensed PCS band ("UPCS") as a home for future 3G wireless services or as relocation spectrum for those displaced from spectrum allocated for 3G services. The Commission also seeks additional comments on changes to its rules proposed by UTStarcom in its Petition for

[1] Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Services, 32 Comm. Reg. (P&F) 1923 (2001) ("*Further Notice*").

Rulemaking, RM-10024, ("UTS Petition") to develop community wireless networks in the 1910–1920 MHz segment of the UPCS band. UTStarcom confines its comments to issues concerning the UPCS band.

INTRODUCTION AND SUMMARY

When the Commission first allocated the UPCS spectrum to isochronous and asynchronous applications, it anticipated that the allocation would promote the development of innovative, unlicensed PCS technologies, both isochronous for wireless PBX systems and asynchronous for real-time networking among laptop computers, PDAs, and similar devices.[2]

As the Commission acknowledges in its *Further Notice*, there has been "little development of unlicensed asynchronous devices in the 1910-1920 MHz [bands]" and "only limited wireless PBX use … in the 1920-1930 MHz segment."[3] The UPCS band has not developed as anticipated because some of the needs expected to be served by UPCS have been met in other frequency bands and because it has proven difficult to develop cost-effective products that comply with the UPCS isochronous and asynchronous etiquettes.

Accordingly, the promise of the 1910-1930 MHz band for innovative wireless services will remain unfulfilled under the present rules. The Commission's response, however, should not be to reallocate the band to 3G services or radio services displaced by 3G. Instead, by making only modest changes in the rules and expanding the nature of the applications permitted in the UPCS band, the Commission can not only fulfill the promise of the originally contemplated uses of the UPCS band but also foster service offerings that will respond to unmet needs for community wireless services that can be provided rapidly and in a cost-effective manner in no other part of the spectrum. In doing so, the Commission will have selected the highest and best use of this band.

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[2] Amendment of the Commission's Rules to Establish New Personal Communications Services, *Notice of Proposed Rulemaking*, 7 FCC Rcd 5676, 5693 (1992).

[3] *Further Notice* at ¶10.

The UPCS band is not large enough for anticipated broadband 3G services. Moreover, its use as a relocation band for most of the services that have been considered for displacement by 3G services would likely interfere with licensed PCS, since one of the primary purposes of the UPCS band is its use as a guard band between "uplink" and "downlink" PCS transmissions. In short, the UPCS band is not well suited to applications other than the relatively low-power, limited-area, limited-mobility services for which it originally was allocated.

As stated in the UTS Petition, consistent with these characteristics of the band, the best use of the present UPCS frequencies is to serve the unmet needs for community wireless networks in rural areas and for underserved communities. One of the most significant reasons that the need for such service remains unmet is the consolidation of the commercial mobile radio services wireless industry. This has left little spectrum available for small, local operators to provide fixed wireless local loop or limited mobility services. As a result, small towns across the country, unless they had the good fortune to be located on or near an interstate highway that is served by one of the major carriers, are left with no digital wireless service at all.

Given the urgent need for community wireless networks, the Commission should be prepared to bifurcate this proceeding and issue a notice of proposed rulemaking to adopt changes in the Part 15 UPCS rules to permit such innovative networks to serve the unmet needs of residents and businesses in rural and tribal areas, in campus environments, and underserved communities wherever located.

DISCUSSION

I. THE 1910-1930 MHZ BAND SHOULD NOT BE ALLOCATED FOR 3G WIRELESS SERVICES OR USED AS A RELOCATION BAND FOR RADIO SERVICES DISPLACED BY 3G.

The 1910-1930 MHz band is not well suited for wireless applications other than the relatively low-power, limited-area, limited-mobility services for which it originally was allocated. The band is not large enough for anticipated broadband 3G services. Moreover, its use as a relocation band for most of the services that might be displaced

by 3G services could likely interfere with licensed PCS, since one of the primary purposes of the band is its use as a guard band between "uplink" and "downlink" PCS transmissions (PCS Block C uplink goes up to 1910 MHz and PCS Block A downlink begins at 1930 MHz).

The Commission also should give weight to the uses of the 1910-1930 MHz band in other countries. It is used nowhere for 3G services. In most countries, the band is used for low-power fixed wireless access, low-mobility wireless, low-power voice data applications or combinations of the above, commonly incorporating the Personal Handy Phone System ("PHS") standard used by UTStarcom and many other manufacturers. For example, the Inter-American Telecommunication Commission ("CITEL") approved PHS almost two years ago as the applicable worldwide standard for systems that operate in the 1910-1930 MHz band and noted that the CITEL Sixth PCC.III in September 1997 had recommended allocation of frequencies within the 1910-1930 MHz band for any of the following applications: (a) fixed wireless access ("FWA"), (b) low mobility wireless access, (c) low-power voice and data applications, or (d) combination of these applications.[4]

II. THE COMMISSION SHOULD ALLOCATE THE 1910-1920 MHZ BAND TO BENEFIT UNSERVED AND UNDERSERVED COMMUNITIES.

As the Commission noted in the *Further Notice*, UTStarcom proposed that the 1910-1920 MHz band be used for cost-effective community wireless networks for small towns, campus environments, tribal areas, in rural areas generally, and for underserved communities wherever they may be located. The UTS Petition received substantial public support and no opposition. It was apparent from the comments that traditional wireless offerings such as PCS and cellular are not meeting the telecommunications needs of many residents of rural America and that the underserved will continue to be underserved unless the Commission takes action.

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[4] OEA/Ser.L/XVII.4.1 PCC.I/doc. 942/99 rev.1(Dec. 29, 1999) *Final Report* XI (Oct. 25-29, 1999 Buenos Aires, Argentina meeting resolving to adopt Document on Coordination of Standards for Low Mobility Wireless Access Systems on the 1910-1930 MHz band) at 5-6.

Parties, ranging from a rural telephone company in Alaska to small businesses in the New York City area that provide telecommunication services to low-income neighborhoods, urge the Commission to adopt UTStarcom's proposal to facilitate deployment of low-cost telephone and Internet services to areas currently lacking such services.[5] In addition, a community wireless network initiative would satisfy unmet competition and service needs. The U.S. Small Business Administration ("SBA") noted in its comments that UTStarcom's proposal may offer new or expanded opportunities for small businesses to provide wireless services.[6]

III. RESPONSES TO THE COMMISSION'S QUESTIONS.

The Commission has posed a number of questions regarding the UTS Petition, including the adequacy of other frequency bands to accommodate the community wireless networks envisioned by UTStarcom and the optimum regulatory framework for such networks. UTStarcom's responses are set out below.

A. The 1910-1920 MHz Band Is Optimal For Community Wireless Networks.

As stated in the UTS Petition and the supporting public comments and as noted above, the 1910-1920 MHz band is the best spectrum home for community wireless networks because that is the predominant use of the band in most of the world. Therefore, equipment is available immediately in consumer quantities, which means that there will be considerable cost and service benefits to U.S. consumers if the Commission were to harmonize its rules with those in other countries.

In most countries, PHS, DECT, and other protocols may be used in private (PBX) applications as well in wireless local loop applications. A simple cost comparison demonstrates the advantage: in Asia or Europe, the current cost per user (in U.S. dollars) for a typical PHS or DECT system is between $400 and $600 while in the United

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[5] Alaska Power & Telephone Co. Comments on RM-10024 (Jan. 12, 2001) (serving 12, 500 access lines across 23 exchanges from Southeast Alaska to the Artic Circle); Gentech International Inc. Comments (Jan. 18, 2001) (installing telecommunications networks in the New York / New Jersey metropolitan area); Quantum Communications, Inc. Comments (Jan. 29, 2001) (providing telecommunications services to recent low-income immigrants in ethnic New York City neighborhoods).

[6] SBA Comments on RM-10024 (Jan. 23, 2001) at 1.

States, the cost per user for a wireless PBX user, using any one of a number of proprietary air interfaces in the 900, 1900, and 2400 MHz bands, is between $1200 and $2500. Allowing operation of low-cost, internationally standard systems will promote a robust unlicensed wireless market that was originally envisioned when the spectrum was allocated for UPCS and will bring U.S. wireless use to levels comparable to other countries.

There is no other frequency band available that would permit the FCC to gain the advantages of harmonization with other countries in this regard. It is principally such harmonization that will permit the rapid and cost-effective deployment of needed services to rural areas and underserved populations.

B. The Regulatory Framework For Community Wireless Networks Should Be "Coordinated Unlicensed," Using Existing UTAM Coordination Procedures.

In its Petition, UTStarcom originally requested that community wireless networks be regulated as a very limited geographic area radio service – as small as the area served by a "single wired teleco central office" -- licensed and subject to competitive bidding procedures.[7] Upon consideration of the comments submitted regarding its Petition, UTStarcom agrees with the Rural Telecommunications Group ("RTG")[8] that use of the 1910-1920 MHz band should remain unlicensed.

Leaving the spectrum in this band for unlicensed use will encourage deployment of a variety of local applications in different geographical areas offering U.S. consumers and businesses services different from those currently available in the licensed wireless bands. By its nature, these new wireless networks will offer different services in different places, tailored by local service providers to meet local needs. A small, fixed and mobile local loop system to serve a fishing village in Alaska could be deployed on the same frequencies as a totally unrelated system to serve a dense university campus in New Jersey.

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[7] UTStarcom Pet. for Rulemaking, RM-10024 (filed Nov. 6, 2000) at 2, 4-5.
[8] RTG Comments on RM-10024 (Jan. 16, 2001) at 3.

This approach also would allow for extended operation of existing isochronous UPCS systems, which would meet the objective of WINForum's petition.[9] It also would allow for operation of very high density systems for stock exchanges, meeting the needs described in the Ascom waiver request[10] and for operation of campus-wide cordless telephone systems, as described in UTStarcom and Drew University's waiver request.[11]

Finally, the existing UTAM, Inc. ("UTAM") coordination infrastructure should be maintained. Since the UPCS industry has incurred expenses to relocate the fixed microwave incumbents, the Commission should leave the existing mechanisms and fee structure ($20 per subscriber) in place, consistent with the original intent of the UPCS fixed microwave relocation fund.

C. Existing UPCS Uses Would Be Compatible With Community Wireless Network Applications.

Relaxing the existing etiquette requirements for the 1910-1930 MHz band would not interfere with, or otherwise adversely impact, any currently operating UPCS system. Existing systems would continue to operate in place and their operations would be consistent with the new rules suggested by UTStarcom. There are no interference concerns because community wireless network systems will operate at very low power on a local basis in very defined areas, without any change in existing coordination rules.

Moreover, relaxing the UPCS etiquette, yet leaving the spectrum unlicensed while still "coordinated," as specified in the current rules, will permit the deployment of wireless systems in defined areas without concern for interference from a wide variety of cordless phones, Bluetooth devices, and other traditional operations in the 900 MHz and 2400 MHz ISM bands.

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[9] WINForum Pet. for Rulemaking, RM-9498 (filed Jan. 8, 1999).
[10] Ascom Pet. for Waiver, DA 00-2833 (filed Sept. 13, 2000).
[11] UTStarcom and Drew Univ. Pet. for Waiver, DA 00-2061 (filed July 7, 2000).

D. Community Wireless Networks Can Be Accommodated With Only Minimal Changes To The Existing Part 15 Rules.

Only minimal changes to the existing Part 15 UPCS rules would be necessary to accommodate community wireless networks. UTStarcom submitted its suggested changes to those rules as an *ex parte* letter to the Office of Engineering and Technology and has attached that submission to these comments for the convenience of the Commission and interested parties.[12]

As can be seen, the suggested changes primarily would: (1) permit the operation of isochronous devices in the 1910-1920 MHz band and require the coordination of those devices with fixed microwave incumbents through UTAM, while continuing to permit asynchronous devices that are compliant with the existing rules; (2) modestly increase spectral density / power levels, still leaving them lower than the allowed levels for PCS Uplinks; and (3) allow continuous transmission of a control channel in the absence of message traffic.

IV. THE COMMISSION SHOULD ACT EXPEDITIOUSLY TO PERMIT THE DEPLOYMENT OF COMMUNITY WIRELESS NETWORKS IN THE 1910-1920 MHZ BAND.

There is substantial support to shift the 1910-1920 MHz band from asynchronous transmissions to unlicensed isochronous transmissions, as evidenced by the comments on the UTS Petition and the many requests for rule waivers to this effect. There is also an urgent need to deploy telecommunications services to underserved areas. Rather than continue to consider the UTS Petition as part of the far-reaching and complex 3G allocation proceeding, the Commission should separate the 1910-1930 MHz UPCS issues from the rest of the proceeding and expeditiously issue a notice of proposed rulemaking that:

- expands the nature of the applications permitted in the UPCS band to include community wireless networks, leaving the band unlicensed;

[12] Letter from Henry Goldberg, Attorney for UTStarcom, Inc to Julius Knapp, Chief Policy & Rules Div., FCC's Office of Engineering & Technology (May 23, 2001).

- relaxes the UPCS etiquette requirements and allow for modest increases in power levels in the band; and
- applies existing coordination and relocation policies to users of the band.

Such action will result in immediate availability of a rich variety of wireless services to the benefit of U.S. consumers and businesses and will assure that service providers who intend to deploy community wireless networks will have access to both spectrum and cost-effective equipment to use that spectrum.

CONCLUSION

For the reasons set forth above, UTStarcom respectfully urges the Commission promptly to initiate a rulemaking and to adopt rules that permit the rapid deployment of low-cost and varied telecommunications services to all communities currently lacking such services.

Respectfully submitted,

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May 23, 2001

Via Hand Delivery

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Chief, Policy & Rules Division
Office of Engineering & Technology
Federal Communications Commission
~~445~~ 12th Street, S.W., 7th Floor
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Re: RM-10024
Ex Parte

Dear Mr. Knapp:

As you know, UTStarcom filed the above-referenced petition for rule making to allow the deployment of community wireless networks in the 1910-1920 MHz band to serve small towns, tribal areas, and underserved communities. When we met last on this subject, we stated that it might be useful for you to see the actual changes that UTStarcom is proposing in the existing Part 15 rules. The proposed rule changes are attached hereto.

It should be noted that the proposed changes not only would accommodate community wireless networks at 1910-1920 MHz, they would at the same time satisfy other requests regarding the band that have been submitted to the Commission over the past few years.[1] Moreover, the proposed rules are intended to continue to permit asynchronous devices that are compliant with the existing rules,

[1] The prior requests are: UTStarcom's Petition for Waiver for Drew University; Lucent Technologies' Petition for Waiver for Cook County, Illinois; Ascom's Petition for Waiver for stock exchanges in Chicago, New York, and Philadelphia; as well as WinForum's Petition for Rule Making, which is consistent with the Lucent and Ascom waiver petitions.

as well as isochronous devices that currently are permitted in the 1920-1930 MHz band.

Please direct any questions regarding UTStarcom's proposed Part 15 changes to the undersigned.

Respectfully submitted,

Henry Goldberg
Attorney for UTStarcom, Inc.

Cc: Lisa Gaisford
Karen Rackley
John Reed

Attachment

PROPOSED PART 15 CHANGES

§ 15.307 Coordination with fixed microwave service.

(a) UTAM, Inc. is designated to coordinate and manage the transition of the 1910–1930 MHz band from the Private Operational Fixed Microwave Service (OFS) operating under part 101 of this chapter to unlicensed PCS operations,

(b) Each application for certification of equipment operating under the provisions of this subpart must be accompanied by an affidavit from UTAM, Inc. certifying that the applicant is a participating member of UTAM, Inc. In the event a grantee fails to fulfill the obligations attendant to participation in UTAM, Inc., the Commission may invoke administrative sanctions as necessary to preclude continued marketing and installation of devices covered by the grant of certification, including but not limited to revoking certification.

(c) An application for certification of a PCS device that is deemed by UTAM, Inc. to be noncoordinatable will not be accepted until the Commission announces that a need for coordination no longer exists.

(d) A coordinatable PCS device is required to incorporate means that ensure that it cannot be activated until its location has been coordinated by UTAM, Inc. The application for certification shall contain an explanation of all measures taken to prevent unauthorized operation. This explanation shall include all procedural safeguards, such as the mandatory use of licensed technicians to install the equipment, and a complete description of all technical features controlling activation of the device.

~~(e)A coordinatable PCS device that is able to operate without a fixed infrastructure shall incorporate an automatic mechanism for disabling operation in the event it is moved outside the geographic area where its operation has been coordinated by UTAM, Inc. The application for certification shall contain a full description of the safeguards against unauthorized relocation and must satisfy the Commission that the safeguards cannot be easily defeated.~~

~~(f)At such time as the Commission deems that the need for coordination between unlicensed PCS operations and existing Part 101 Private Operational Fixed Microwave Services ceases to exist, the disabling mechanism required by paragraph (e) of this section will no longer be required.~~

~~(g)~~(e) Operations under the provisions of this subpart are required to protect systems in the Private Operational Fixed Microwave Service operating within the 1850–1990 MHz band until the dates and conditions specified in §§ 101.69 through 101.73 of this chapter for termination of primary status. Interference protection is not required for part 101 stations in this band licensed on a secondary basis.

~~(h)~~(f) The operator of a PCS device that is relocated from the coordinated area specified by UTAM, Inc., must cease operating the device until coordination for the new location is verified by UTAM, Inc.

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§ 15.319 General technical requirements.

(a) The 1910–1920 MHz band is limited to use by asynchronous devices under the requirements of § 15.321 and by isochronous devices under the requirements of § 15.320. The 1920–1930 MHz sub-band is limited to use by isochronous devices under the requirements of § 15.323. The 2390–2400 MHz band is limited to use by asynchronous devices under the requirements of § 15.323.

(b) All transmissions must use only digital modulation techniques.

~~Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz.~~ When a coordinatable PCS device is operating in a county with population > 500/square mile, peak transmit power shall not exceed 250 microwatts multiplied by the square root of the emission bandwidth in hertz. When a coordinatable PCS device is operating in a country with population ≤ 500/square mile, peak transmit power shall not exceed 3000 microwatts multiplied by the square root of the emission bandwidth in hertz. Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

Renumber remaining sections of §15.319

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NEW § 15.320 Specific requirements for associated controlling and controlled isochronous devices operating in the 1910–1920 MHz bands.

(a) Operation shall be contained within the 1910–1920 MHz band. The emission bandwidth of any intentional radiator operating in these bands shall be no more than 1.25 MHz.

(b) All systems shall have their single control channel in the 1910-1911.25 MHz band. It shall be possible to change the control channel used within this band.

(c) The isochronous controlling devices must incorporate a mechanism for monitoring the time and spectrum windows that its transmission is intended to occupy.

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§ 15.321 Specific requirements for asynchronous devices operating in the 1910–1920 MHz and 2390–2400 MHz bands.

(a) Operation shall be contained within either or both of the 1910–1920 MHz and 2390–2400 MHz bands. The emission bandwidth of any intentional radiator operating in these bands shall be no less than 500 kHz.

(b) All systems of less than 2.5 MHz emission bandwidth shall start searching for an available spectrum window within 3 MHz of the band edge at 1910, 1920, 2390, or 2400 MHz while systems of more than 2.5 MHz emission bandwidth will first occupy the center half of the band. Devices with an emission bandwidth of less than 1.0 MHz may not occupy the center half of the band if other spectrum is available.

(c) Asynchronous devices must incorporate a mechanism for monitoring the spectrum that its transmission is intended to occupy. The following criteria must be met:

(1) At least once per 24 hour period, the device must monitor the 1910-1911.25 MHz band with a threshold of not more than –81 dBm.

(2) If activity is detected in the 1910-1911.25 MHz band, then, immediately prior to initiating a transmission, devices must monitor the spectrum window they intend to use for at least 50 microseconds for spectrum windows in the 2390-2400 MHz band, for at least 5 ms for spectrum windows in the 1911.25 – 1920 MHz band and for at least 100 ms for spectrum windows in the 1910 – 1911.25 MHz band. If no activity is detected in the 1910-1911.25 MHz band, then, immediately prior to initiating a transmission, devices must monitor the spectrum window they intend to use for at least 50 microseconds for all spectrum windows

~~(1) Immediately prior to initiating a transmission, devices must monitor the spectrum window they intend to use for at least 50 microseconds.~~

Renumber remaining sections of §15.321